

## Western Ecological Research Center

# Publication Brief for Resource Managers

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## Factors Influencing the Incidence of Cowbird Parasitism of Least Bell's Vireos

The least Bell's vireo is a federally endangered subspecies of Bell's vireo subject to high levels of brood parasitism by brown-headed cowbirds. Brood parasitism greatly reduces the reproductive success and productivity of vireos, but little is known about what factors influence the incidence of parasitism within this subspecies. USGS scientists Dr. Barbara Kus and Bryan Sharp examined the relationship of vegetation structure surrounding nests and of vireo behavior near nests to the incidence of parasitism. Their findings, reported in the current issue of the *Journal of Wildlife Management*, provide data with which to design recovery strategies to minimize parasitism of the least Bell's vireo.

Working at their long-term study site on the San Luis Rey River in southern California, the authors monitored nesting activity of a population of 100–125 vireo pairs annually during three seasons between 1999 and 2003. Unlike in the previous 10 years, no cowbird control was conducted at the site during this period, providing a unique opportunity to study cowbird parasitism of least Bell's vireos and the factors influencing it. The scientists analyzed 27 variables quantifying vegetation structure around vireo nests at three spatial scales: microhabitat (0–1 m from a nest), mesohabitat (1–11.3 m from a nest), and macrohabitat (greater than 11.3 m from a nest). In addition, they used videorecordings from specialized micro-cameras hidden near nests and audio-tape recordings at nest sites to examine parental activity (vocalization rates, trips to and from nests), which they hypothesized might facilitate discovery of nests by cowbirds. They found that nests with high microhabitat cover and mesohabitat cover within 5 m of the nest had a lower incidence of parasitism than those with low cover at these scales. Unparasitized nests had fewer trees greater than 8-cm diameter at breast height (dbh) within 11.3 m, and they had less canopy cover

### Management Implications:

- Microhabitat cover is the most important habitat feature influencing the incidence of brood parasitism of least Bell's vireos. Dense cover near nests likely reduces the ability of cowbirds to locate vireo nests and may shield parental activity from the view of searching cowbirds.
- At the mesohabitat scale, large trees (> 8-cm dbh) and their associated canopy may provide vantage points for perched cowbirds searching the habitat for host nests and increase the likelihood of parasitism.
- Habitat management to improve breeding success of least Bell's vireos should focus on increasing the density of understory vegetation. Increasing cover by willows may be a particularly effective way to create or enhance the microhabitat conditions that reduce parasitism.
- Exploration of methods to enhance understory cover combined with experimental testing of their effectiveness in reducing parasitism should be pursued.

within 5 m than parasitized nests. Although the species of plant supporting vireo nests was not found to be a significant predictor of parasitism risk, nests placed in large willows (*Salix lasiolepis*, *S. laevigata*, *S. gooddingii*) were less likely to be parasitized than those in other hosts, suggesting that these willows more often provide the microhabitat cover associated with reduced risk. Vireo activity near the nest did not differ significantly between parasitized and unparasitized nests.

Sharp, B. L. and B. E. Kus. 2006. Factors influencing the incidence of cowbird parasitism of Least Bell's Vireos. *Journal of Wildlife Management* 70(3):682–690.